

SEQUENCE LISTING

<110> Fisher, Paul B.

<120> Genes Displaying Enhanced Expression During
Cellular Senescence and Terminal Cell
Differentiation and Uses Thereof

<130> 0575/56765

<140> WIPO ST. 10/C

<141> 1999-02-03

<160> 50

<170> PatentIn Ver. 2.0

<210> 1

<211> 674

<212> DNA

<213> Homo sapien

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<212> DNA

<213> Homo sapien

<400> 2

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<212> DNA

<213> Homo sapien

<400> 3

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<210> 4

<211> 675

<212> DNA

<213> Homo sapien

<400> 4

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<210> 5

<211> 460

<212> DNA

<213> Homo sapien

<400> 5

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<210> 6

<211> 445

<212> DNA

<213> Homo sapien

<400> 6

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<210> 7

<211> 666

<212> DNA

<213> Homo sapien

<400> 7

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<210> 8

<211> 409

<212> DNA

<213> Homo sapien

<400> 8

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<210> 9

<211> 667

<212> DNA

<213> Homo sapien

<400> 9

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<210> 10

<211> 672

<212> DNA

<213> Homo sapien

<400> 10

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<210> 11

<211> 672

<212> DNA

<213> Homo sapien

<400> 11

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acatgggaaa ag 672

<210> 12

<211> 669

<212> DNA

<213> Homo sapien

<400> 12

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tntgggata 669

<210> 13

<211> 702

<212> DNA

<213> Homo sapien

<400> 13

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tatcaggaag atatcggcga cattgtggac ttggcttcag tgaggtagaa gaccatgatg 180
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<210> 14

<211> 312

<212> DNA

<213> Homo sapien

<400> 14

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aaaaaaaaaa ac 312

<210> 15

<211> 391

<212> DNA

<213> Homo sapien

<400> 15

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agcagttggg agagttaaag ccgagaatca aacagagtaa ccagaactcg agggggggcc 360
cggtacccaa ttcgccctat agtgagtcgt t 391

<210> 16

<211> 720

<212> DNA

<213> Homo sapien

<400> 16

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<210> 17

<211> 205

<212> DNA

<213> Homo sapien

<400> 17

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cagcattccc cctcaaacct aaaaaaaaaa aaaaaaannt ngnggggggg cccggncccc 180
anttcnccnt ntngggngnn gnntt 205

<210> 18

<211> 691

<212> DNA

<213> Homo sapien

<400> 18

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cgaatgggtc cattctctct ccggactttt t 691

<210> 19

<211> 483

<212> DNA

<213> Homo sapien

<400> 19

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actgcccagg gacctgccc ggccccaccc aagggctccc aaggggtgag atttctgcag 420
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<210> 20
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<212> DNA
<213> Homo sapien

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<400> 20
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<210> 21
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<212> DNA
<213> Homo sapien

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<400> 21
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aatgagaatg gattctgtac aatacactag aaaccaacat aatgtatttc tttaaacctt 240
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<210> 22
<211> 480
<212> DNA
<213> Homo sapien

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<400> 22
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 tgttattccc aatacactag cagttaatgc tgcccaggac tccacagatc tggttgcaaa 360
 attaagagct tttcataatg aggccaggt taaccagaa cgtaaaaatc taaaatgatt 420
 ggtcttgatt tgagcaatgg taaacctcga gggggggccc ggtaccaat tcgccctata 480

<210> 23
 <211> 198
 <212> DNA
 <213> Homo sapien

<400> 23
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 tctttgttta acaaaccatg catttaagtt taagtgaagt caacaaaaag gaaataggtg 120
 tatggatatg tgattttgag attaaagtta gtcttaaaat gtaaaaaaaaa aaaaaaaaaa 180
 aaaaaaaaaa aaaaaaaaaa 198

<210> 24
 <211> 414
 <212> DNA
 <213> Homo sapien

<400> 24
 aattcggcac gagaaaagca gtataactgc ctgacacagc gggattgaac gagagaagaa 60
 attgttcggt attgctcaga aaattcaaac acgcaaagat cttatggata aaactcagaa 120
 agtgaagggt aagaaagaaa cgggtgaactc cccagctatt tataaatttc agagtcgtcg 180
 aaaacgttga cgtgttatag ataagccttg tcattctgta tcaaaaatct gttgtcgttt 240
 tctagtaact tcaaattcca ttactccaaa tggcatgggt ttccggtttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatggacaa cattaaatct cctcccttc 360
 tgtagaanan anannnnnaaa aancncncng gggggggccg ggtccccatt cccc 414

<210> 25
 <211> 367
 <212> DNA
 <213> Homo sapien

<400> 25
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 attgttcggt attgctcaga aaattcaaac acgcaaagat cttatggata aaactcagaa 120
 agtgaagggt aagaaagaaa cgggtgaactc cccagctatt tataaatttc agagtcgtcg 180
 aaaacgttga cgtgttatag ataagccttg tcattctgta tcaaaaatct gttgtcgttt 240
 tctagtaact tcaaattcca ttactccaaa tggcatgggt ttccggtttg taaccataac 300
 taaattgtca gtctgacatt taatgtcttt ctatgggaca acattaaatc tccctccctt 360
 ctgtaaa 367

<210> 26
 <211> 432
 <212> DNA
 <213> Homo sapien

<400> 26
 aattcggcac gaggcagact tgaaacagtt ctgtctgcag aatgctcaac atgaccctct 60
 gctgactgga gtatcttcaa gtacaaatcc cttcagaccc cagaaagtct gttccttttt 120
 gtagtaaaat gaatctttca aaggtttccc aaaccactcc ttatgatcca gtgaatattc 180
 aagagagcta catttgaagc ctgtacaaaa gcttatccct gtaacacatg tgccataata 240
 tacaaacttc tactttcgtc agtccttaac atctacctct ctgaattttc atgaatttct 300
 atttcacaag ggtaattggt ttatatacac tggcagcagc atacaataaa acttagtatg 360
 aaactttaaa aaaaaaaaaa aaaacntcnn ggggggnccc ggancccant tcncctata 420
 gggngnccgn tt 432

<210> 27
 <211> 398
 <212> DNA
 <213> Homo sapien

<400> 27
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 aacttcgcaa aatgcctaga tattatccta ctgaagatgt gcctcgaaag ctggtgagcc 120
 acggcaaaaa acccttcagt cagcacgtga gaaaactgcg agccagcatt acccccggga 180
 ccattctgat catcctcact ggacgccaca ggggcaagag ggtgggttttc ctgaagcagc 240
 tggctagtgg cttattactt gtgactggac ctctggctcct caatcgantt cctctacnaa 300
 gaacacacca gaaatttgtc attgccactt caaccaaagt cgatntcngc antgtannaa 360
 atcccaanac atcttactga tgcttacttc aagatgaa 398

<210> 28
 <211> 232
 <212> DNA
 <213> Homo sapien

<400> 28
 aattcggcac gagattgtat cggttttata ttacctgttc tgcttcacca ggagatcatg 60
 ctgctgtgat actgagtttt ctaaacagca taaggaagac ttgctccctt gtcctatgaa 120
 agagaatagt tttggagggg agaagtggga caaaaaagat gcagttttcc tttgtattgg 180
 gaaatgtgaa aataaaattg tcaactcttt caaaaaaaaaa aaaaaaaaaa aa 232

<210> 29
 <211> 539
 <212> DNA
 <213> Homo sapien

<400> 29
 aattcggcac gagcacaacc agaaagtaag gtgttctact tgaaaatgaa aggagattat 60

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tttaggtatc tttctgaagt ggcattctgga gacaacaaac aaaccactgt gtcgaactcc 120
cagcaggctt accaggaagc atttgaaatt agtaagaaag aaatgcagcc tacacacca 180
attcgtcttg gtctggcact aaatttctca gtcttttact atgagattct aaactctcct 240
gaaaaggcct gtagcctggc aaaaacggca tttgatgaag caattgctga attggatagc 300
ctgaatgaag agtcttataa agacagcact ctgatcatgc agttacttag ggacaattca 360
ctctgtggac atcggaaaac cagggagacg aaggagacgc tggggaggga gagaactaat 420
gtttctcgtg ctttgtgatc tgttcagtg cactctgtac cctcaacata tatcccttgt 480
gcgataaaaa aaaanaaaaa aaaaaccntc nggggggggc ccggancccn attccccct 539

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<210> 30

<211> 568

<212> DNA

<213> Homo sapien

<400> 30

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attccaaacc aagtagtgtc tgtcagccct cttactctg tgcacgccct atttcagtct 60
tttacatttg ttcttctagg gaatgtatgc atctctatat atattttccc tctcaaaacc 120
agaacatcaa cagtgtctgtt tctgacactt cagacatccc acgcaaagcc acattgaatt 180
tttgccaaat gaaaaacaca tccacaatca agttctaaga ggggtgtcaag tggggaatat 240
taatatgtgt tattattcaa aaatttagtt tatnaaangg aancaaaacc nttgaacctt 300
ttttcccnaa aaanaaggaa aatntnntgt ngaccaaggg ncgaacctga atccnccttg 360
aaaaattgtt ntctcagaaa ggaaaagcgc cctccagttc ttttacccca agaatttana 420
aaaatttggt ccaagatttt atagtgtcag ttgtttatgt ntaaaaataa ctttctggat 480
tttgtggggg aggaccggaa aagggaaggga gtttattcct atgttataca ntanaaaactt 540
ccccnataaa atgccatnga tgggttga 568

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<210> 31

<211> 315

<212> DNA

<213> Homo sapien

<220>

<223> Human sapien

<400> 31

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aattcggcac gagcagggag ccgctagtga aaatctggca tgaaataagg actaatggcc 60
ccaaaaaagg aggtggctct aagtaaaact gggattggac agtagtggtg catctggtcc 120
ttgccgcctg agagccccag gagacatcgg cttagatgac catggctatg ctcccgctctg 180
gaagatgcca gcatctggcc tcccactggt ttcagctgtg tccccagtc cgtgtctttt 240
tagaatgtga atgatgataa agttgtgaaa taaaggtttc tatctagttt gtaaaaaaaa 300
aaaaaaaaaa aaaaaa 315

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<210> 32

<211> 458

<212> DNA

<213> Homo sapien

<400> 32

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aattcaagga actttacatt gtaagagaaa acaaaacact gcaaaagaag tgtgccgact 60
atcaaataaa tggtgaaatc atctgcaaat gtggccaggc ttggggaaca atgatgggtgc 120
acaaaggctt agatttgcct tgtctcaaaa taaggaattt tgtagtgggtt ttcaaaaata 180
attcaacaaa gaaacaatac aaaaagtggg tagaattacc tatcacattt cccaatcttg 240
actattcaga atgctgttta tttagtgtatg aggattagca cttgattgaa gattctttta 300
aaatactatc agttaaacat ttaatatgat tatgattaat gnattcatta tgctncagac 360
tgacntanga atcantaaaa ngatngtttt actctgcaaa aaaaaaaaaa aacncggggg 420
ggggcccggc cccaatttcc ccttntgggg ggggggttt 458

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<210> 33

<211> 470

<212> DNA

<213> Homo sapien

<400> 33

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aattcttatt ttccagaggc tacaattatt ataatggaca atactttttac ctttgtctct 60
aaagatcaga ttagtttttat ttgttcactt acgtgctttg attatcccct ctgaattata 120
gaccgagtct tgttgttttag cctaagagaa gatttatgta gtaatttctt ctcagggtatg 180
gaaccacggt cataactaac atgttggcca gaatagaacc actgggttaa catattttat 240
tcaccattaa gtgatcttta tcaatattct ggattagaca acaaattacc tttctgggtg 300
tttcttgtaa actatactcc tgtttgaatg ttaactttg ttgctaaagt ttaattttta 360
gatgtttgaa tgttcagttt atgtatttga actacaataa accaaccctt tttatataaa 420
aaaaaaaaa aacntcgagg gggggcccgg cccaatttnn ccctataggg 470

```

<210> 34

<211> 261

<212> DNA

<213> Homo sapien

<400> 34

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aattcgaact gtgtgtatgt cagtggaaac aaatcaaaag ccactaacat ggctgtctgt 60
ttcactggac tgtcccattt gctgggttaa aggattgggg cccaaatcct ctggccatagc 120
atttctcagt gtttgcattt cagactgtct aaatacagca tgtgacaagc tgaagaagcc 180
aaatctagca gtcatttctg atttcattat attctcccc tcttctctgct aaaaagacaa 240
aaaacaaaaa aaaaaaaaaa a
261

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<210> 35

<211> 309

<212> DNA

<213> Homo sapien

<400> 35

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aattcggcac gagctggaca ccaacagtga tggtcagcta gatttctcag aatttcttaa 60
tctgattggg ggcctagcta tggcttgcca tgactccttc ctcaaggctg tcccttccca 120
gaagcggacc tgaggacccc ttggccctgg ccttcaaacc ccccccttt ccttccagcc 180
tttctgtcat catctccaca gccaccccat cccctgagca cactaaccac ctcatgcagg 240
ccccacctgc caatagtaat aaagcaatgt cactttttta aaacatgaaa aaaaaaaaaa 300
aaaaaaaaa
309

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<210> 36
 <211> 243
 <212> DNA
 <213> Homo sapien

<400> 36
 aattcggntc gagctcgaat aagtttgact tgtgttttat cttaccacc agatcattcc 60
 ttctgtagct caggagagca cccctccacc ccatttgctc gcagtatcct agaatctttg 120
 tgctctcgct gcagttccct ttgggttcca tgttttcctt gttccctccc atgcctagct 180
 ggattgcaga gttaagtta tgattatgaa ataaaaacta aataacaaaa aaaaaaaaaa 240
 aaa 243

<210> 37
 <211> 650
 <212> DNA
 <213> Homo sapien

<400> 37
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 ttccgtgtga acttgccctgc agaaccaggt gtgctttgaa gcaatgttgt gggacactac 120
 cacaagcccc ttctggaaaag gatgcagaaa agaccacagc agtttagcatt tcttgtttag 180
 aacttagtaa caatctagag aagaagccca ggaggactaa agctgaaaac atccctgctg 240
 ttgtgataga gattaaaaaac atgccaaaaca aacaacctga atcatctttg tgagtcttga 300
 aaaagatgtg atatttgact tttgctttta actgcaagag gaaaaagact ccactgaaat 360
 tctaagtttg ccaagtagtg taattgaagt ccttgctctgg tcacacagtt taattctatt 420
 tttgtaagaa cataatggga ctgcataaca gagttctata ttacaatttt gtgattatta 480
 gtacagagta cagctatgct gtgactgttt tggaaaagcca gttttaacac tatgttacat 540
 ttttgnttaa agnaagttta accttatata acntaatgac atttgatttc tggattttcc 600
 catgataaaa aattaggggg gataaataaa aatggttact ggaatttcaa 650

<210> 38
 <211> 687
 <212> DNA
 <213> Homo sapien

<400> 38
 gaattcggca cgagattttt ttatttttca ttttccctt aggcataattt agtatttttc 60
 cctcaggcag atcattctga gtgtgagagt gtgtgtgcac atgttacaaa ggcaactacc 120
 atgttaataa aatattcaat ttgaaatcct tttcgggtatt tgaattgctt ttgaataatg 180
 ttttttatct ggatgtaaca ttgttgcaat agctttttta ctttcccaag taattgaata 240
 cattttatta cttggacttt tataaactct tccctaccc actataaatg agacattcac 300
 agcgttcaag tttgtattaa aggaaaggat tagtttgacc ctttcttttg atgggttaatg 360
 catacatgca gttaaattccc tttatgcaaa tgtgacactg ctttactagg tcttttagtt 420
 atttatttat tttttttttt ttgnccantt nattttttan nntaatttnt naaacncatt 480
 attttttttt aaaaataaaaa aacacnactn tttnttttta ananttaaac cttantaaat 540
 ttttcccccn aaaaaaaatc ccntaanntt ttnaatttnt tgaattnaan annaantaaa 600
 ccttttttna aaccnnggcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 660

aaaaaaaaaa aaaaaaaaaa aaaaaaa

687

<210> 39

<211> 2549

<212> DNA

<213> Homo sapien

<400> 39

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ctatggagta gcgcagggtc tcgagctgtg gccgtggact taggcaacag gaaattagaa 120
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gcagtagatg gtgtaaatga gcctgatgtc ctagcaatta atggcgcttc cgtagccctc 480
tcattatcag atattccttg gaatggacct gttggggcag tacgaatagg aataattgat 540
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cagcaggact tttgccatgc tatcaaagtg ggagtgaat ataccaaca aataattcag 720
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gatcctgaga agggtgaaat agaagattat cgtttgctga cagatatttt ggggaattgaa 1560
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ccgtgggtcag aactttgaat gacagaagta gtattgtaat gggagaacct atttcacagt 2280
catcatctaa ttctcagtga tttttttttt ttaaagagaa ttctagaatt ctattttgtc 2340
taggggtgat tgctgtagag caacatttta gtagatcttc cattgtgtag atttctatat 2400

aatataaata cattttaatt atttgtacta aaatgctcat ttacatgtgc cattttttta 2460
 attcgagtaa cccatatttg ttttaattgta tttacattat aaatcaagaa atattttatta 2520
 ttaaaagtaa gtcattttata catcttaga 2549

<210> 40
 <211> 649
 <212> DNA
 <213> Homo sapien

<400> 40
 ttgaagatta caatgggtgac atggacttca aaatagctgg cactaataaa ggaataactg 60
 cattacaggc tgatattaaa ttacctggaa taccaataaa aattgtgatg gaggctattc 120
 aacaagcttc agtggcaaaa aaggagatat tacagatcat gaacaaaact atttcaaaac 180
 ctcgagcatc tagaaaagaa aatggacctg ttgtagaaac tgttcagggt ccattatcaa 240
 aacgagcaaa atttgttggg cctgggtggc ataacttaaa aaaacttcag gctgaaacag 300
 gtgtaactat tagtcagggt gatgaagaaa cgttttgtat ttgcaccaac acccagtggt 360
 atgcatgagg caagaagact tcattactga atctgcaagg atgatcagga gcagcaatta 420
 gaatttggag cagtatatat cgccacaata actgaaatca gagatactgg tgtaatggta 480
 aaattatatc caaatatgac tgcggtactg cttcataaca cacaacttga taacgaaaga 540
 ttaaacaatcc tactgcccta ggattagaag ttggccaaga aattcagggt aaatactttg 600
 gactgtgacc cagccgatgg aagaatgagg ctttctcgaa aagtgttc 649

<210> 41
 <211> 638
 <212> DNA
 <213> mouse

<400> 41
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 gatattaagt tacctggagt accaattaaa attataatgg aagccatcca acaagcgtca 120
 gtggcaaaaga aggagatact gcagataatg aacaaacgat ttcaaaacct cgagcatcaa 180
 gaaaagaaaa tggaccaggt gtagaaacag taaaggttcc attatcaaaa cgagcaaaat 240
 tcgttggggc tgggtggatat cacttaaaaa aactccaggc tgagacagggt gtaacaatta 300
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 caagagattt cattacagaa atttgcagag atgatcaaga gcaacaatta gaatttggag 420
 cagttttatc cgcgacaata actgaaatca gagacactgg agtgatggta aaactgtatc 480
 caaacatgac tgcagtgtg cttcataatt cacaacttga ccaacgaaag attaaacatc 540
 ccactgccct aggactagag gtggccaaga aattcagggt aaatactttg gccgtgatcc 600
 agctgatgga agaatgaggc tttctcgtaa agtacttc 638

<210> 42
 <211> 705
 <212> PRT
 <213> Homo sapien

<400> 42
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 1 5 10 15

Gln Val Arg Ala Leu Trp Ser Ser Ala Gly Ser Arg Ala Val Ala Val
 20 25 30

Asp Leu Gly Asn Arg Lys Leu Glu Ile Ser Ser Gly Lys Leu Ala Arg
 35 40 45

Phe Ala Asp Gly Ser Ala Val Val Gln Ser Gly Asp Thr Ala Val Met
 50 55 60

Val Thr Ala Val Ser Lys Thr Lys Pro Ser Pro Ser Gln Phe Met Pro
 65 70 75 80

Leu Val Val Asp Tyr Arg Gln Lys Ala Ala Ala Ala Gly Arg Ile Pro
 85 90 95

Thr Asn Tyr Leu Arg Arg Glu Val Gly Thr Ser Asp Lys Glu Ile Leu
 100 105 110

Thr Ser Arg Ile Ile Asp Arg Ser Ile Arg Pro Leu Phe Pro Ala Gly
 115 120 125

Tyr Phe Tyr Asp Thr Gln Val Leu Cys Asn Leu Leu Ala Val Asp Gly
 130 135 140

Val Asn Glu Pro Asp Val Leu Ala Ile Asn Gly Ala Ser Val Ala Leu
 145 150 155 160

Ser Leu Ser Asp Ile Pro Trp Asn Gly Pro Val Gly Ala Val Arg Ile
 165 170 175

Gly Ile Ile Asp Gly Glu Tyr Val Val Asn Pro Thr Arg Lys Glu Met
 180 185 190

Ser Ser Ser Thr Leu Asn Leu Val Val Ala Gly Ala Pro Lys Ser Gln
 195 200 205

Ile Val Met Leu Glu Ala Ser Ala Glu Asn Ile Leu Gln Gln Asp Phe
 210 215 220

Cys His Ala Ile Lys Val Gly Val Lys Tyr Thr Gln Gln Ile Ile Gln
 225 230 235 240

Gly Ile Gln Gln Leu Val Lys Glu Thr Gly Val Thr Lys Arg Thr Pro
 245 250 255

Gln Lys Leu Phe Thr Pro Ser Pro Glu Ile Val Lys Tyr Thr His Lys
 260 265 270

Leu Ala Met Glu Arg Leu Tyr Ala Val Phe Thr Asp Tyr Glu His Asp
 275 280 285

Lys Val Ser Arg Asp Glu Ala Val Asn Lys Ile Arg Leu Asp Thr Glu
 290 295 300

Glu Gln Leu Lys Glu Lys Phe Pro Glu Ala Asp Pro Tyr Glu Ile Ile
 305 310 315 320

Glu Ser Phe Asn Val Val Ala Lys Glu Val Phe Arg Ser Ile Val Leu
 325 330 335

Asn Glu Tyr Lys Arg Cys Asp Gly Arg Asp Leu Thr Ser Leu Arg Asn
 340 345 350

Val Ser Cys Glu Val Asp Met Phe Lys Thr Leu His Gly Ser Ala Leu
 355 360 365

Phe Gln Arg Gly Gln Thr Gln Val Leu Cys Thr Val Thr Phe Asp Ser
 370 375 380

Leu Glu Ser Gly Ile Lys Ser Asp Gln Val Ile Thr Ala Ile Asn Gly
 385 390 395 400

Ile Lys Asp Lys Asn Phe Met Leu His Tyr Glu Phe Pro Pro Tyr Ala
 405 410 415

Thr Asn Glu Ile Gly Lys Val Thr Gly Leu Asn Arg Arg Glu Leu Gly
 420 425 430

His Gly Ala Leu Ala Glu Lys Ala Leu Tyr Pro Val Ile Pro Arg Asp
 435 440 445

Phe Pro Phe Thr Ile Arg Val Thr Ser Glu Val Leu Glu Ser Asn Gly
 450 455 460

Ser Ser Ser Met Ala Ser Ala Cys Gly Gly Ser Leu Ala Leu Met Asp
 465 470 475 480

Ser Gly Val Pro Ile Ser Ser Ala Val Ala Gly Val Ala Ile Gly Leu
 485 490 495

Val Thr Lys Thr Asp Pro Glu Lys Gly Glu Ile Glu Asp Tyr Arg Leu
 500 505 510

Leu Thr Asp Ile Leu Gly Ile Glu Asp Tyr Asn Gly Asp Met Asp Ph
 515 520 525

Lys Ile Ala Gly Thr Asn Lys Gly Ile Thr Ala Leu Gln Ala Asp Ile
 530 535 540
 Lys Leu Pro Gly Ile Pro Ile Lys Ile Val Met Glu Ala Ile Gln Gln
 545 550 555 560
 Ala Ser Val Ala Lys Lys Glu Ile Leu Gln Ile Met Asn Lys Thr Ile
 565 570 575
 Ser Lys Pro Arg Ala Ser Arg Lys Glu Asn Gly Pro Val Val Glu Thr
 580 585 590
 Val Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly
 595 600 605
 Tyr Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln
 610 615 620
 Val Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met
 625 630 635 640
 His Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu
 645 650 655
 Gln Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile
 660 665 670
 Arg Asp Thr Gly Val Met Val Lys Leu Tyr Pro Asn Met Thr Ala Val
 675 680 685
 Leu Leu His Asn Thr Gln Leu Asp Asn Glu Arg Leu Asn Ile Leu Leu
 690 695 700

Pro
 705

<210> 43
 <211> 665
 <212> PRT
 <213> Homo sapien

<400> 43
 Met Gly Gln Glu Lys His Val Phe Thr Ile Asp Trp Ala Gly Arg Thr
 1 5 10 15
 Leu Thr Leu Thr Val Asn Tyr Glu Glu Arg Leu Tyr Ala Val Gly Lys

20 30 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270

The pro gly phe the lys arg glu gly arg pro ser glu lys ala
 val leu ala ser arg leu the asp arg pro the arg pro leu phe ala
 asp gly phe arg asn glu val gin val the ser the val met ser val
 asp gin asn cys ser ser glu met ala ala met phe gly ser ser leu
 ala leu ser val ser asp the pro phe glu gly pro the ala gly val
 thr val gly arg the asp asp gin phe the the asn pro thr val asp
 gin leu glu lys ser asp the asn leu val val ala gly thr lys asp
 ala the asn met val glu ala gly ala asp glu val pro glu the
 met leu glu ala the met phe gly his glu the lys arg leu the
 ala phe gin glu the val ala ala val gly lys glu lys ser glu
 the lys leu phe glu the asp glu glu leu asn glu lys val lys ala
 leu ala glu glu asp leu leu lys ala the gin val his glu lys his
 ala arg glu asp ala the asn glu val lys asn ala val val ala lys
 phe glu asp glu his asp glu asp thr the lys gin val lys gin
 the leu ser lys leu val lys asn glu val arg arg leu the thr glu
 glu lys val arg pro asp glu val asp glu the arg pro leu

275
 Ser Ser Gln Val Gly Leu Leu Pro Arg Thr His Gly Ser Gly Leu Phe
 290 295 300
 Thr Arg Gly Gln Thr Gln Ala Leu Ser Val Cys Thr Leu Gly Ala Leu
 305 310 315 320
 Gly Asp Val Gln Ile Leu Asp Gly Leu Gly Val Gln Gln Ser Lys Arg
 325 330 335
 Phe Met His His Tyr Asn Phe Pro Gln Phe Ser Val Gly Gln Thr Gly
 340 345 350
 Pro Met Arg Gly Pro Gly Arg Arg Gln Ile Gly His Gly Ala Leu Gly
 355 360 365
 Gln Arg Ala Leu Gln Pro Val Ile Pro Ser Gln Lys Asp Phe Pro Tyr
 370 375 380
 Thr Val Arg Leu Val Ser Gln Val Ser Asn Gly Ser Thr Ser
 385 390 395 400
 Gln Ala Ser Ile Cys Ala Ser Thr Leu Ala Met Met Asp Ala Gly Val
 405 410 415
 Pro Ile Lys Ala Pro Val Ala Gly Ile Ala Met Gly Leu Val Lys Ser
 420 425 430
 Gly Gln His Tyr Thr Val Leu Thr Asp Ile Gln Gly Met Gln Asp Ala
 435 440 445
 Leu Gly Asp Met Asp Phe Lys Val Ala Gly Thr Gln Lys Gly Val Thr
 450 455 460
 Ala Leu Gln Met Asp Ile Lys Ile Gln Gly Leu Ser Arg Gln Ile Leu
 465 470 475 480
 Gln Gln Ala Leu Gln Gln Ala Lys Lys Gly Arg Met Gln Ile Leu Asn
 485 490 495
 Ser Met Leu Ala Thr Leu Ser Gln Ser Arg Lys Gln Leu Ser Arg Tyr
 500 505 510
 Ala Pro Lys Ile Leu Thr Met Thr Ile Asn Pro Asp Lys Ile Arg Asp
 515 520 525
 Val Ile Gly Pro Ser Gly Lys Gln Ile Asn Lys Ile Ile Gln Gln Thr
 20

275
 Ser Ser Gln Val Gly Leu Leu Pro Arg Thr His Gly Ser Gly Leu Phe
 290 295 300
 Thr Arg Gly Gln Thr Gln Ala Leu Ser Val Cys Thr Leu Gly Ala Leu
 305 310 315 320
 Gly Asp Val Gln Ile Leu Asp Gly Leu Gly Val Gln Gln Ser Lys Arg
 325 330 335
 Phe Met His His Tyr Asn Phe Pro Gln Phe Ser Val Gly Gln Thr Gly
 340 345 350
 Pro Met Arg Gly Pro Gly Arg Arg Gln Ile Gly His Gly Ala Leu Gly
 355 360 365
 Gln Arg Ala Leu Gln Pro Val Ile Pro Ser Gln Lys Asp Phe Pro Tyr
 370 375 380
 Thr Val Arg Leu Val Ser Gln Val Ser Asn Gly Ser Thr Ser
 385 390 395 400
 Gln Ala Ser Ile Cys Ala Ser Thr Leu Ala Met Met Asp Ala Gly Val
 405 410 415
 Pro Ile Lys Ala Pro Val Ala Gly Ile Ala Met Gly Leu Val Lys Ser
 420 425 430
 Gly Gln His Tyr Thr Val Leu Thr Asp Ile Gln Gly Met Gln Asp Ala
 435 440 445
 Leu Gly Asp Met Asp Phe Lys Val Ala Gly Thr Gln Lys Gly Val Thr
 450 455 460
 Ala Leu Gln Met Asp Ile Lys Ile Gln Gly Leu Ser Arg Gln Ile Leu
 465 470 475 480
 Gln Gln Ala Leu Gln Gln Ala Lys Lys Gly Arg Met Gln Ile Leu Asn
 485 490 495
 Ser Met Leu Ala Thr Leu Ser Gln Ser Arg Lys Gln Leu Ser Arg Tyr
 500 505 510
 Ala Pro Lys Ile Leu Thr Met Thr Ile Asn Pro Asp Lys Ile Arg Asp
 515 520 525
 Val Ile Gly Pro Ser Gly Lys Gln Ile Asn Lys Ile Ile Gln Gln Thr
 20

530	535	540
Gly Val Lys Ile Asp Ile Glu Gln Asp Gly Thr Il Phe Ile Ser Ser		
545	550	555 560
Thr Asp Glu Ser Gly Asn Gln Lys Ala Lys Lys Ile Ile Glu Asp Leu		
	565	570 575
Val Arg Glu Val Glu Val Gly Gln Leu Tyr Leu Gly Lys Val Lys Arg		
	580	585 590
Ile Glu Lys Phe Gly Ala Phe Val Glu Ile Phe Ser Gly Lys Asp Gly		
	595	600 605
Leu Val His Ile Ser Glu Leu Ala Leu Glu Arg Val Gly Lys Val Glu		
	610	615 620
Asp Val Val Lys Ile Gly Asp Glu Ile Leu Val Lys Val Thr Glu Ile		
	625	630 635 640
Asp Lys Gln Gly Arg Val Asn Leu Ser Arg Lys Ala Val Leu Arg Glu		
	645	650 655
Glu Lys Glu Lys Glu Glu Gln Gln Ser		
	660	665
<210> 44		
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<213> Homo sapien		
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Asp Gly Pro Phe Leu Leu Pro Arg Arg Asp Arg Ala Leu Thr Gln Leu		
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Gln Val Arg Ala Leu Trp Ser Ser Ala Gly Ser Arg Ala Val Ala Val		
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Asp Leu Gly Asn Arg Lys Leu Glu Ile Ser Ser Gly Lys Leu Ala Arg		
	35	40 45
Phe Ala Asp Gly Ser Ala Val Val Gln Ser Gly Asp Thr Ala Val Met		
	50	55 60
Val Thr Ala Val Ser Lys Thr Lys Pro Ser Pro Ser Gln Phe Met Pro		
	65	70 75 80

Leu Val Val Asp Tyr Arg Gln Lys Ala Ala Ala Ala Gly Arg Ile Pro
 85 90 95
 Thr Asn Tyr Leu Arg Arg Glu Val Gly Thr Ser Asp Lys Glu Ile Leu
 100 105 110
 Thr Ser Arg Ile Ile Asp Arg Ser Ile Arg Pro Leu Phe Pro Ala Gly
 115 120 125
 Tyr Phe Tyr Asp Thr Gln Val Leu Cys Asn Leu Leu Ala Val Asp Gly
 130 135 140
 Val Asn Glu Pro Asp Val Leu Ala Ile Asn Gly Ala Ser Val Ala Leu
 145 150 155 160
 Ser Leu Ser Asp Ile Pro Trp Asn Gly Pro Val Gly Val Arg Ile Gly
 165 170 175
 Ile Ile Asp Gly Glu Tyr Val Val Asn Pro Thr Arg Lys Glu Met Ser
 180 185 190
 Ser Ser Thr Leu Asn Leu Val Val Ala Gly Ala Pro Lys Ser Gln Ile
 195 200 205
 Val Met Leu Glu Ala Ser Ala Glu Asn Ile Leu Gln Gln Asp Phe Cys
 210 215 220
 His Ala Ile Lys Val Gly Val Lys Tyr Thr Gln Gln Ile Ile Gln Gly
 225 230 235 240
 Ile Gln Gln Leu Val Lys Glu Thr Gly Val Thr Lys Arg Thr Pro Gln
 245 250 255
 Lys Leu Phe Thr Pro Ser Pro Glu Ile Val Lys Tyr Thr His Lys Leu
 260 265 270
 Ala Met Glu Arg Leu Tyr Ala Val Phe Thr Asp Tyr Glu His Asp Lys
 275 280 285
 Val Ser Arg Asp Glu Ala Val Asn Lys Ile Arg Leu Asp Thr Glu Glu
 290 295 300
 Gln Leu Lys Glu Lys Phe Pro Glu Ala Asp Pro Tyr Glu Ile Ile Glu
 305 310 315 320
 Ser Phe Asn Val Val Ala Lys Glu Val Phe Arg Ser Ile Val Leu Asn
 325 330 335

Glu Tyr Lys Arg Cys Asp Gly Arg Asp Leu Thr Ser Leu Arg Asn Val
 340 345 350
 Ser Cys Glu Val Asp Met Phe Lys Thr Leu His Gly Ser Ala Leu Phe
 355 360 365
 Gln Arg Gly Gln Thr Gln Val Leu Cys Thr Val Thr Phe Asp Ser Leu
 370 375 380
 Glu Ser Gly Ile Lys Ser Asp Gln Val Ile Thr Ala Ile Asn Gly Ile
 385 390 395 400
 Lys Asp Lys Asn Phe Met Leu His Tyr Glu Phe Pro Pro Tyr Ala Thr
 405 410 415
 Asn Glu Ile Gly Lys Val Thr Gly Leu Asn Arg Arg Glu Leu Gly His
 420 425 430
 Gly Ala Leu Ala Glu Lys Ala Leu Tyr Pro Val Ile Pro Arg Asp Phe
 435 440 445
 Pro Phe Thr Ile Arg Val Thr Ser Glu Val Leu Glu Ser Asn Gly Ser
 450 455 460
 Ser Ser Met Ala Ser Ala Cys Gly Gly Ser Leu Ala Leu Met Asp Ser
 465 470 475 480
 Gly Val Pro Ile Ser Ser Ala Val Ala Gly Val Ala Ile Gly Leu Val
 485 490 495
 Thr Lys Thr Asp Pro Glu Lys Gly Glu Ile Glu Asp Tyr Arg Leu Leu
 500 505 510
 Thr Asp Ile Leu Gly Ile Glu Asp Tyr Asn Gly Asp Met Asp Phe Lys
 515 520 525
 Ile Ala Gly Thr Asn Lys Gly Ile Thr Ala Leu Gln Ala Asp Ile Lys
 530 535 540
 Leu Pro Gly Ile Pro Ile Lys Ile Val Met Glu Ala Ile Gln Gln Ala
 545 550 555 560
 Ser Val Ala Lys Lys Glu Ile Leu Gln Ile Met Asn Lys Thr Ile Ser
 565 570 575
 Lys Pro Arg Ala Ser Arg Lys Glu Asn Gly Pro Val Val Glu Thr Val
 580 585 590

Gln Val Pro Leu Ser Lys Arg Ala Lys Phe Val Gly Pro Gly Gly Tyr
595 600 605

Asn Leu Lys Lys Leu Gln Ala Glu Thr Gly Val Thr Ile Ser Gln Val
610 615 620

Asp Glu Glu Thr Phe Ser Val Phe Ala Pro Thr Pro Ser Val Met His
625 630 635 640

Glu Ala Arg Asp Phe Ile Thr Glu Ile Cys Lys Asp Asp Gln Glu Gln
645 650 655

Gln Leu Glu Phe Gly Ala Val Tyr Thr Ala Thr Ile Thr Glu Ile Arg
660 665 670

Asp Thr Gly Val Met Val Lys Leu Tyr Pro Asn Met Thr Ala Val Leu
675 680 685

Leu His Asn Thr Gln Leu Asp Asn Glu Arg Leu Asn Ile Leu Leu Pro
690 695 700

<210> 45

<211> 245

<212> PRT

<213> B subtilis

<400> 45

Asp Arg Leu Gly Leu Ala Ala Gly Gly Asp Thr Ala Val Thr Ala Pro
1 5 10 15

Pro Phe Pro Leu Val Tyr Ala Gly Ile Pro Arg Glu Ser Lys Leu Ser
20 25 30

Arg Ile Asp Arg Ile Arg Pro Leu Phe Gly Gln Val Val Asp Ala Gly
35 40 45

Ser Ala Leu Ser Ser Asp Ile Gly Pro Val Gly Ile Asp Asn Pro Thr
50 55 60

Ser Asn Leu Val Val Ala Gly Lys Ile Met Glu Ala Ala Ala Ile Gly
65 70 75 80

Ile Val Gly Lys Lys Leu Phe Glu Leu Ala Glu Leu Glu Lys Glu Val
85 90 95

Glu Val Arg Ile Glu Arg Asp Gly Arg Arg Ser Glu Val His Gly Ser
 100 105 110
 Leu Phe Arg Gly Gln Thr Gln Leu Thr Leu Asp Lys Phe Met His Tyr
 115 120 125
 Phe Pro Glu Gly Gly Arg Arg Glu Gly His Gly Ala Leu Glu Ala Leu
 130 135 140
 Pro Val Ile Pro Asp Phe Pro Thr Arg Ser Glu Val Leu Glu Ser Asn
 145 150 155 160
 Gly Ser Ser Ala Ser Cys Leu Ala Met Asp Gly Val Pro Ile Val Ala
 165 170 175
 Gly Ala Gly Leu Val Glu Tyr Leu Thr Asp Ile Gly Glu Asp Gly Asp
 180 185 190
 Met Asp Phe Lys Ala Gly Thr Lys Gly Thr Ala Leu Gln Asp Ile Lys
 195 200 205
 Gly Ile Glu Ala Gln Gln Ala Glu Ile Leu Met Thr Ser Arg Pro Thr
 210 215 220
 Lys Gly Pro Gly Lys Glu Thr Gly Val Ile Thr Ser Ala Ile Gln Leu
 225 230 235 240
 Gly Val Lys Leu Glu
 245

<210> 46
 <211> 47
 <212> RNA
 <213> Homo sapien

<400> 46
 uaaauuuuau auauuuuauu uuuuuuuuuu uuuuuuuuuu uuuuuuuu

47

<210> 47
 <211> 11
 <212> RNA
 <213> Homo sapien

<400> 47
 uuuuuuuuuu a

11

<210> 48
<211> 33
<212> RNA
<213> Homo sapien

<400> 48
uauuuauuuu aaauuuuaaa uuuuauuuu aa

33

<210> 49
<211> 62
<212> RNA
<213> Homo sapien

<400> 49
guuuuuuuuu uauuuauuuu gauggauucu cagauuuuu uauuuuuuuu uuuuuuuuuu 60
uu 62

<210> 50
<211> 111
<212> RNA
<213> Homo sapien

<400> 50
auuuuacaugu gccauuuuuu uauuucgagu aaccuauuu uguuuuuuug uauuuacauu 60
auuuuacauu aaauuuuuu uauuuuuuuu aagucuuuu uacauuuuag a 111